

**Current List of Claims**

1. (Original) A method for a data communications system, the method comprising:  
transmitting data in a transport overhead field to at least one network element, the data providing a source identifier and a destination identifier; and  
using the data in the transport overhead field to provide end-to-end services.
2. (Original) The method of claim 1 wherein the transport overhead field is a J1 field in a SONET communication packet.
3. (Original) The method of claim 2 wherein the J1 field includes the source identifier and the destination identifier.
4. (Original) The method of claim 1 further comprising:  
applying a routing protocol to read the source identifier and the destination identifier.
5. (Original) The method of claim 1 wherein the end-to-end services include one or more of routing, provisioning and restoration of functions.
6. (Original) The method of claim 1 wherein the end-to-end services are path-level services of a SONET communications network.
7. (Original) The method of claim 1 wherein the method is performed in a communication circuit disposed in one of a synchronous optical network (SONET) and a Synchronous Digital Hierarchy (SDH).
8. (Original) The method of claim 7, wherein the communication circuit is implemented as a line card.
9. (Original) The method of claim 7 wherein the communication circuit is a protocol processor.

10. (Original) The method of claim 1 wherein the data further includes one or more of  
transport identification data (TID),  
Internet Protocol (IP) addresses,  
Common Language Location Information (CLLI) data, and  
requests for bandwidth.
11. (Original) The method of claim 1 wherein the data providing the source identifier and the destination identifier avoid manual point-by-point routing of STS-Ns.
12. (Original) The method of claim 1 further comprising:  
applying a wavelength routing protocol to the data in the transport overhead field  
to provide end-to-end services,  
the wavelength protocol locating new paths for communication.
13. (Original) The method of claim 12 wherein an intelligent routing software system in combination with the wavelength routing protocol determines end-to-end routing automatically.
14. (Original) The method of claim 12 wherein the wavelength protocol locating new paths for communication is implemented manually.
15. (Original) An apparatus disposed in a communication system, the apparatus comprising:  
means for transmitting data in a transport overhead field to at least one network element, the data providing a source identifier and a destination identifier;  
and  
means for using the data in the transport overhead field to provide end-to-end services.
16. (Original) The apparatus of claim 15 wherein the transport overhead field is a J1 field in a SONET communication packet.

17. (Original) The apparatus of claim 16 wherein the J1 field includes the source identifier and the destination identifier.
18. (Original) The apparatus of claim 15 further comprising:  
means for applying a routing protocol to read the source identifier and the destination identifier.
19. (Original) The apparatus of claim 15 wherein the end-to-end services include one or more of routing, provisioning and restoration of functions.
20. (Original) The apparatus of claim 15 wherein the end-to-end services are path-level services of a SONET communications network.
21. (Original) The apparatus of claim 15 wherein the apparatus includes a communication circuit disposed in one of a synchronous optical network (SONET) and a Synchronous Digital Hierarchy (SDH).
22. (Original) The apparatus of claim 21 wherein the communication circuit is implemented as a line card.
23. (Original) The apparatus of claim 21 wherein the communication circuit is a protocol processor.
24. (Original) The apparatus of claim 15 wherein the data further includes one or more of  
transport identification data (TID),  
Internet Protocol (IP) addresses,  
Common Language Location Information (CLLI) data, and  
requests for bandwidth.
25. (Original) The apparatus of claim 15 wherein the data providing the source identifier and the destination identifier avoids manual point-by-point routing of STS-Ns.

26. (Original) The apparatus of claim 15 further comprising:  
means for applying a wavelength routing protocol to the data in the transport  
overhead field to provide end-to-end services,  
the wavelength protocol locating new paths for communication.
27. (Original) The apparatus of claim 26 wherein an intelligent routing  
software system in combination with the wavelength routing protocol determines end-to-  
end routing automatically.
28. (Original) The apparatus of claim 26 wherein the wavelength protocol  
locates new paths for communication manually.
29. (Original) A computer program product for communication, the computer  
program product comprising:  
signal bearing media bearing programming adapted to  
transmit data in a transport overhead field to at least one network element, the  
data providing a source identifier and a destination identifier; and  
use the data in the transport overhead field to provide end-to-end services.
30. (Previously Presented) A method for a data communications system, the  
method comprising:  
receiving data in a transport overhead field by at least one network element, the  
data providing a source identifier and a destination identifier; and  
using the data in the transport overhead field to provide end-to-end services.
31. (Previously Presented) The method of claim 30 wherein the transport  
overhead field is a J1 field in a SONET communication packet.
32. (Previously Presented) The method of claim 31 wherein the J1 field  
includes the source identifier and the destination identifier.

33. (Previously Presented) The method of claim 30 further comprising:  
applying a routing protocol to read the source identifier and the destination  
identifier.
34. (Previously Presented) The method of claim 30 wherein the end-to-end  
services include one or more of routing, provisioning and restoration of functions.
35. (Previously Presented) The method of claim 30 wherein the end-to-end  
services are path-level services of a SONET communications network.
36. (Previously Presented) The method of claim 30 wherein  
the method is performed in a communication circuit disposed in one of a  
synchronous optical network (SONET) and a Synchronous Digital  
Hierarchy (SDH).
37. (Previously Presented) The method of claim 36, wherein the  
communication circuit is implemented as a line card.
38. (Previously Presented) The method of claim 36 wherein the  
communication circuit is a protocol processor.
39. (Previously Presented) The method of claim 30 wherein the data further  
includes one or more of  
transport identification data (TID),  
Internet Protocol (IP) addresses,  
Common Language Location Information (CLLI) data, and  
requests for bandwidth.
40. (Previously Presented) The method of claim 30 wherein the data  
providing the source identifier and the destination identifier avoid manual point-by-point  
routing of STS-Ns.

41. (Previously Presented) The method of claim 30 further comprising:  
applying a wavelength routing protocol to the data in the transport overhead field  
to provide end-to-end services,  
the wavelength protocol locating new paths for communication.
42. (Previously Presented) The method of claim 41 wherein an intelligent  
routing software system in combination with the wavelength routing protocol determines  
end-to-end routing automatically.
43. (Previously Presented) The method of claim 41 wherein the wavelength  
protocol locating new paths for communication is implemented manually.
44. (Previously Presented) An apparatus disposed in a communication  
system, the apparatus comprising:  
a receiver configured to receive data in a transport overhead field from at least  
one network element,  
the data providing a source identifier and a destination identifier,  
wherein the receiver uses the data in the transport overhead field to  
provide end-to-end services.
45. (Previously Presented) The apparatus of claim 44 wherein the transport  
overhead field is a J1 field in a SONET communication packet.
46. (Previously Presented) The apparatus of claim 45 wherein the J1 field  
includes the source identifier and the destination identifier.
47. (Previously Presented) The apparatus of claim 44 wherein the receiver  
applies a routing protocol to read the source identifier and the destination identifier.

48. (Previously Presented) The apparatus of claim 44 wherein the end-to-end services include one or more of

routing,  
provisioning and  
restoration of functions.

49. (Previously Presented) The apparatus of claim 44 wherein the end-to-end services are path-level services of a SONET communications network.

50. (Previously Presented) The apparatus of claim 44 wherein the data further includes one or more of

transport identification data (TID),  
Internet Protocol (IP) addresses,  
Common Language Location Information (CLLI) data, and  
requests for bandwidth.

51. (Previously Presented) The apparatus of claim 44 wherein the data providing the source identifier and the destination identifier avoids manual point-by-point routing of STS-Ns.

52. (Previously Presented) The apparatus of claim 44 further comprising:  
means for applying a wavelength routing protocol to the data in the transport  
overhead field to provide end-to-end services,  
the wavelength protocol locating new paths for communication.

53. (Previously Presented) The apparatus of claim 52 wherein  
an intelligent routing software system in combination with the wavelength routing  
protocol determines end-to-end routing automatically.

54. (Previously Presented) The apparatus of claim 52 wherein the wavelength  
protocol locates new paths for communication manually.